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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,780	09/24/2003	Zhenan Bao	36	6385

7590 01/12/2005

Lucent Technologies Inc.
Docket Administrator (Room 3J-219)
101 Crawfords Corner Road
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EXAMINER	
ANYA, IGWE U	

ART UNIT	PAPER NUMBER
2825	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/669,780	BAO, ZHENAN	
	Examiner	Art Unit	
	Igwe U. Anya	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-12 and 15-18* is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☒ Claim(s) *13 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/24/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 12, and 15 – 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Knipp et al. (USPAB 2004/0124416).

3. Knipp et al. teach an organic FET, comprising:

a substrate (110) having a planar surface (figs. 3);

a continuous first layer (130) whose surface has a plurality of non-intersecting smooth regions (portions of 130 not masked by 240 & 245), each smooth region being laterally surrounded by a laterally bordering rough region (portions of 130 masked by 240 & 245) of the same surface of the first layer (fig. 3D, paragraphs 25, & 29),

a continuous second layer (250) located on the same surface of the first layer that has the smooth and rough regions;

wherein one of the layers is a dielectric and the other of the layers is an organic semiconductor (paragraph 29); and

wherein first portions of the layer of organic semiconductor have substantially higher conductivities in a direction along the layers than second portions of the layer of

organic semiconductor, the first portions of the layer of organic semiconductor being located facing the smooth regions and the second portions of the layer of organic semiconductor being located facing the rough regions (paragraphs 25 & 31);

wherein the first layer is a dielectric;

wherein the organic semiconductor includes pentacene (paragraph 31);

wherein the conductivities of the first portions are at least 10 times higher than those of the second portions (paragraph 31);

wherein the layer of organic semiconductor is polycrystalline and has an average grain size that is at least 10 times smaller in the second portions than in the first portions (paragraphs 31, figs. 4 & 5);

wherein the rough regions have a roughness characterized by a maximum peak-to-valley height of at least 0.2 times the thickness of the layer comprising organic semiconductor (paragraph 31); and

further teaches pressing a surface of a stamp into the first layer (SAM) to modify the first layer (paragraph 30); and

vapor or solution deposition of the organic semiconductor layer (paragraph 28).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 – 5 and 7 – 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knipp et al. (USPAB 2004/0124416) in view of Amundson et al. (US Patent 6498114).

6. The Knipp et al. reference teaches the features previously outlined, but lacks:

pressing a surface of a stamp into the first layer to produce a pattern of nonintersecting smooth regions on the surface in the first layer, each smooth region being laterally surrounded by a laterally bordering rough region of the surface of the first layer, the pattern of smooth and rough regions on the surface of the first layer copying a pattern of smooth and rough areas on the surface of the stamp;

inking the stamp with a solvent capable of dissolving material of the first layer, and wherein the act of pressing comprises pressing an inked surface of the stamp into the first layer and the resistivity of the inked surface being at least 10 times the resistivity of the surface without ink; and

the smooth regions have diameters of less than about 10 micrometers.

7. However, Amundson et al. teach a method, comprising:

pressing a surface of a stamp (fig. 2B element 300) into the first layer (20) to produce a pattern of nonintersecting smooth regions (20) on the surface in the first layer, each smooth region being laterally surrounded by a laterally bordering rough region (21, 22) of the surface of the first layer, the pattern of smooth and rough regions on the surface of the first layer copying a pattern of smooth and rough areas on the surface of the stamp; and

inking (100) the stamp with a solvent capable of dissolving material of the first layer, and wherein the act of pressing comprises pressing an inked surface of the stamp into the first layer and the resistivity of the inked surface being at least 10 times the resistivity of the surface without ink (col. 3 line 45 – col. 4 line 17).

8. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Amundson et al. into the Knipp et al. reference to form a conductivity enhancing surface on a semiconductor.

9. Regarding the smooth regions have diameters of less than about 10 micrometers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the diameter to application. Where the general conditions of a claim are disclosed in prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Knipp et al. (USPAB 2004/0124416) in view of Amundson et al. (US Patent 6498114), and further in view of Brewer et al. (USPAB 2003/0068519).

11. The Knipp/Amundson et al. reference teaches the features previously outlined, but lacks providing heat to soften the first layer during pressing

12. However, Brewer et al. teach providing heat to soften a layer thereby facilitating during stamping (paragraph 40).

13. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Brewer et al. into the Knipp/Amundson et al. reference to soften the layer during pressing.

14. Claims 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Prior art considered, but not used in the rejection include Hirai (US 6740900), Smith et al. (US 6768132), Dodabalapur (US 5596208), Sagisaka et al. (US 2004/0212042), Duthaler et al. (US 6413790), Dimitrakopoulos et al. (US 6344662), Aratani et al. (US 5705826), and Dimitrakopoulos et al. (US 6344660).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya

Examiner
Art Unit 2825

IA

January 6, 2005